

00:00:07.230 --> 00:00:09.654

Alright, this video is about simplifying

00:00:09.654 --> 00:00:10.866

complex rational expressions,

00:00:10.870 --> 00:00:12.814

so we're going to talk about

00:00:12.814 --> 00:00:14.110

simplifying this guy again,

00:00:14.110 --> 00:00:16.646

and there are a couple ways to simplify.

00:00:16.650 --> 00:00:17.904

These expressions.

00:00:17.904 --> 00:00:21.955

And one of them is you clear out

00:00:21.955 --> 00:00:23.854

top and bottom, clear out the

00:00:23.854 --> 00:00:25.822

denominators and that can be tricky.

00:00:25.830 --> 00:00:27.566

So this this way is a little

00:00:27.566 --> 00:00:28.850

bit more step by step.

00:00:28.850 --> 00:00:31.696

And before we do it, let's let's

00:00:31.696 --> 00:00:33.397

think about this for just a second.

00:00:33.400 --> 00:00:36.520

Let's say that I have one.

00:00:36.520 --> 00:00:38.792

Divided by.

00:00:38.792 --> 00:00:43.170

$\frac{2}{3}$ So that's that's just gonna be.

00:00:43.170 --> 00:00:45.078

Three halves, right?

00:00:45.080 --> 00:00:48.384

But if I have $1 / \frac{1}{3}$.

00:00:48.384 --> 00:00:50.820

Plus $\frac{1}{3}$ so that's like a complex

00:00:50.910 --> 00:00:53.072

rational expression, right?

00:00:53.072 --> 00:00:55.080

That's fractions with fractions.

00:00:55.080 --> 00:00:56.448

And I can't just.

00:00:58.900 --> 00:00:59.998

I can't just flip those guys,

00:01:00.000 --> 00:01:02.808

it's actually kind of hard for me to do.

00:01:02.810 --> 00:01:05.029

I can't just one at a time.

00:01:05.030 --> 00:01:05.744

Flip these guys.

00:01:05.744 --> 00:01:07.968

What I really need to do is put them

00:01:07.968 --> 00:01:09.711

together into $\frac{2}{3}$ and then I can

00:01:09.711 --> 00:01:11.586

flip on so the same kind of thing.

00:01:11.590 --> 00:01:15.040

Go on over here what we're going to do is.

00:01:15.040 --> 00:01:17.338

At the beginning.

00:01:17.340 --> 00:01:19.900

We can just pull this top piece off,

00:01:19.900 --> 00:01:22.888

combine that into one rational expression.

00:01:22.890 --> 00:01:24.227

And while we're doing it sort of

00:01:24.227 --> 00:01:25.350

forget about the bottom right,

00:01:25.350 --> 00:01:26.610

so we get something over here.

00:01:26.610 --> 00:01:28.269

Do the same thing to the bottom,

00:01:28.270 --> 00:01:29.968

just focus just on the bottom,

00:01:29.970 --> 00:01:30.875

and then we're going to

00:01:30.875 --> 00:01:32.110

divide the top by the bottom.

00:01:32.110 --> 00:01:34.396

Doing this invert and multiply stuff.

00:01:34.400 --> 00:01:36.520

So I'm going to do the top in this color.

00:01:36.520 --> 00:01:39.754

We're just going to get one over.

00:01:39.760 --> 00:01:44.570

A. It was a / B and the common

00:01:44.570 --> 00:01:46.770

denominator there is a B.

00:01:46.770 --> 00:01:48.660

So multiply here by be over

00:01:48.660 --> 00:01:50.460

be ending at B / A B.

00:01:52.890 --> 00:01:57.190

And here by a / A so a ².

00:01:57.190 --> 00:02:03.370

Over a B. So there we're getting be.

00:02:03.370 --> 00:02:09.198

Plus a a^2 / AB and that's the top.

00:02:09.200 --> 00:02:12.050

OK, and then the bottom.

00:02:12.050 --> 00:02:13.860

Is going to be again

00:02:13.860 --> 00:02:15.050

common denominators, Abby.

00:02:18.060 --> 00:02:19.726

So multiply this guy. Be over be.

00:02:22.910 --> 00:02:26.720

And I'm going to get here. Be over Abby.

00:02:29.430 --> 00:02:31.140

And then multiply this guy by a / A .

00:02:34.080 --> 00:02:34.948

Add across the top.

00:02:39.660 --> 00:02:41.920

So this rational expression,

00:02:41.920 --> 00:02:44.180

this complex rational expression

00:02:44.180 --> 00:02:46.238

is really the top over there.

00:02:52.050 --> 00:02:54.588

Divided by the bottom over there.

00:03:01.030 --> 00:03:03.082

And then all we do is just invert and

00:03:03.082 --> 00:03:04.110

multiply. So we're going to have.

00:03:14.180 --> 00:03:16.484

Right these guys cancel and then we get.

00:03:21.910 --> 00:03:24.370

And we're done, so that's.

00:03:24.370 --> 00:03:25.423

Simplifying complex rational

00:03:25.423 --> 00:03:27.529

expressions by sort of dealing with

00:03:27.529 --> 00:03:29.622

the top and the bottom one at a time

00:03:29.622 --> 00:03:31.176

and then doing invert and multiply

00:03:31.176 --> 00:03:33.540

and maybe a bit longer way to go.

00:03:33.540 --> 00:03:35.415

But on the other hand.

00:03:35.420 --> 00:03:38.594

It really reduces it just to you know.

00:03:38.594 --> 00:03:40.196

People are usually successful with this

00:03:40.196 --> 00:03:41.977

kind of division and then you really

00:03:41.977 --> 00:03:44.252

just have to like do a couple additions,

00:03:44.252 --> 00:03:45.236

top and bottom.

00:03:45.240 --> 00:03:47.328

You can do them one at a time.

00:03:47.330 --> 00:03:48.668

Turn this into a division problem

00:03:48.668 --> 00:03:49.960

that's just invert and multiply,

00:03:49.960 --> 00:03:50.647

and you're done.

00:03:50.647 --> 00:03:52.490

But you do have to be careful, right?

00:03:52.490 --> 00:03:54.970

That you don't fall into this kind of a trap,

00:03:54.970 --> 00:03:55.558

so that's it.